WHAT IS CLAIMED IS:

Sub C1

1. In a receiver section of a relayed communication system, a method for removal of self-interference comprising:

modeling downconversion imperfections in a receiver downconverter in said receiver section;

compensating for said downconversion imperfections in a received relayed composite signal to produce a compensated composite signal; and

canceling self-generated signal portions from said compensated composite signal to provide an output signal for demodulation.

2. The method according to claim 1 wherein said receiver downconverter model imperfections include at least one of the following:

quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude imbalance.

3. The method according to claim 1 wherein said upconversion imperfection compensating step includes setting d.c. level based on said modulated output signal.

4. The method according to claim 1 wherein said upconversion imperfections compensating step includes comparing at least one of the following:

phase and magnitude of said modulated output signal with corresponding characteristics of said replicated modulated user signal.

5. In a receiver section of a relayed communication system, a method for removal of self-interference comprising:

modeling upconversion imperfections in a transmitter upconverter in a transmitter section; and

compensating for said upconversion imperfections to produce a compensated composite signal; while

canceling self-generated signal portions from said compensated composite signal to provide an output signal for demodulation.

6. The method according to claim 5 wherein said compensating and canceling steps are based on a representation of a self-generated signal and a received relayed composite signal.

7. The method according to claim 6 wherein said representation of said self-generated signal is a delayed replicated self-generated signal.

8. The method according to claim 5 wherein said transmitter upconverter model imperfections include at least one of the following:

quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude imbalance.

9. The method according to claim 5 wherein said upconversion imperfection compensating step includes setting d.c. level based on said modulated output signal.

10. The method according to claim 5 wherein said upconversion imperfections compensating step includes comparing at least one of the following:

phase and magnitude of said modulated output signal with corresponding characteristics of said replicated modulated user signal.

11. The method according to claim 5 wherein said upconversion imperfections compensating step includes comparing phase of said modulated output signal with corresponding characteristics of said replicated modulated user signal.

12. The method according to claim 5 wherein said upconversion imperfections compensating step includes correlating said modulated output signal with said replicated modulated user signal.

13. The method according to claim 12 wherein said correlating is among any two quadrature components.

14. A method for self-interference removal in a relayed communication system comprising:

providing a model of an imperfect receiver downconverter;

compensating for downconversion imperfections in said imperfect receiver downconverter at the output of said receiver downconverter to remove said downconversion imperfections to produce a compensated composite signal;

providing a model of an imperfect transmitter upconverter;

replicating a modulated user signal using as input a user baseband signal to produce a replicated modulated user signal;

compensating for upconversion imperfections in said imperfect transmitter upconverter on said replicated modulated user signal to remove said upconversion imperfections to produce a compensated replicated modulated user signal; and

canceling said compensated replicated modulated user signal from said compensated composite signal to provide a modulated output signal.

15. The method according to claim 14 wherein said receiver downconverter model imperfections include at least one of the following:

quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude imbalance.

16. The method according to claim 14 wherein said transmitter upconverter model imperfections include at least one of the following:

quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude imbalance.

17. The method according to claim 14 wherein said receiver downconverter model imperfections include at least one of the following:

quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude imbalance; and wherein

said transmitter upconverter model imperfections include at least one of the following:

quadrature phase offset, quadrature d.c. imbalance, and quadrature amplitude imbalance.

18. The method according to claim 14 wherein said upconversion imperfection compensating step includes setting d.c. level based on said modulated output signal.

19. The method according to claim 14 wherein said upconversion imperfections compensating step includes comparing at least one of the following:

phase and magnitude of said modulated output signal with corresponding characteristics of said replicated modulated user signal.

20. The method according to claim 14 wherein said downconversion imperfection compensating step includes setting d.c. level based on output level of said downconverter.

21. The method according to claim 20 wherein said downconversion imperfections compensating step includes comparing at least one of the following:

phase and magnitude of the output of said downconverter with corresponding characteristics of said compensated composite signal.

22. The method according to claim 14 wherein said upconversion imperfections compensating step includes comparing phase of said modulated output signal with corresponding characteristics of said replicated modulated user signal.

23. The method according to claim 14 wherein said upconversion imperfections compensating step includes correlating said modulated output signal with said replicated modulated user signal.

24. The method according to claim 23 wherein said correlating is among any two quadrature components.

25. An apparatus for self-interference removal in a relayed communication system comprising:

a first compensator for compensating for downconversion imperfections in said imperfect receiver downconverter at the output of said receiver downconverter to remove said downconversion imperfections to produce a compensated composite signal;

a replicator for replicating a modulated user signal using as input a user baseband signal to produce a replicated modulated user signal;

a second compensator for compensating for upconversion imperfections in said imperfect transmitter upconverter on said replicated modulated user signal to remove

said upconversion imperfections to produce a compensated replicated modulated user signal; and

a canceller for canceling said compensated replicated modulated user signal from said compensated composite signal to provide a modulated output signal.

26. In a receiver section of a relayed communication system, an apparatus for removal of self-interference comprising:

a compensator for compensating for said downconversion imperfections in a received relayed composite signal to produce a compensated composite signal; and

a canceler for canceling self-generated signal portions from said compensated composite signal to provide an output signal for demodulation.

27. In a receiver section of a relayed communication system, an apparatus for removal of self-interference comprising:

a compensator for compensating for said upconversion imperfections to produce a compensated composite signal; and

a canceller for canceling self-generated signal portions from said compensated composite signal to provide an output signal for demodulation.